DOCUMENT RESUME

ED 294 920 TM 011 663

AUTHOR Banerji, Madhabi
TITLE An Assessment of the Importance of Joseph Mayer Rice in American Educational Research.
PUB DATE Apr 88
NOTE 64p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
PUB TYPE Information Analyses (070) -- Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Educational History; *Educational Research; *Literature Reviews; *Research Methodology
IDENTIFIERS *Rice (Joseph Mayer)

ABSTRACT

Historical accounts of the American public school system vary on whether Joseph Mayer Rice, the 19th century physician-turned-journalist who wrote numerous studies aimed at educational reform, is important in the history of educational research and on the nature of his influence in the field. An examination of the treatment of Rice by educational writers of the past and present and a systematic study of Rice's original works provides insights into the following issues: (1) the existence of a viable model for educational research that could be called the "Rice Paradigm"; (2) the amenability to definition of the Rice Paradigm in terms of purpose, method, and assumptions; (3) the relevance of Rice's questions to contemporary researchers; and (4) the viability of the Rice Paradigm over the years. To answer these questions, the study combined the historical and empirical approaches. More specifically, the study proceeds from an analysis of Rice's major studies to an explanation of the Rice Paradigm. A survey of the literature in which Rice is cited allows determination of the exact areas where issues pertinent to Rice are addressed. Finally, a survey of a selected sample of recently published educational research studies are considered as empirical evidence of the contemporary relevance of the Rice Paradigm. Seven tables and a list of 46 references are presented. Population samples of educational research studies published in 1983 are tabulated, and instruments used in the analysis of research are appended. (TJH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED294920

An Assessment of the Importance of Joseph Mayer Rice in American Educational Research

by

Madhabi Banerji

University of South Florida

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

MADHABI BANERJI

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Paper presented at the annual meeting of the American Educational Research Association, New Orleans, April 6, 1988.

TM011663

An Assessment of the Importance of Joseph Mayer Rice in American Educational Research

Almost every historical account of the public school system, including the histories of educational research in America makes at least one reference to Joseph Mayer Rice. Opinions vary both on whether Rice is important in the history of educational research and on the nature of his influence in this field. While some authors interpret Rice's role as that of a muckraker who indirectly participated in the school reform movement of the nineteenth century (Tyack, 1974), others portray him as a pioneer researcher (Judd, 1938; Walker, 1977; Ebel, 1980). R. M. W. Travers (1983), in his treatise on research in the public schools, dismisses Rice as a mere romantic figure. In Travers' opinion, "empirical methods for improving education had been in existence for at least 50 years before Joseph Mayer Rice entered the field of educational reform", and therefore " he is mistakenly regarded as the father of educational research" (Travers, 1983, p. 98).

Yet Rice continues to be cited in educational literature ranging in topic from history to curriculum to testing. Rice's name is most often encountered in textbooks and papers on educational research and evaluation. (For examples, see Ary, Jacobs & Razavieh, 1985; Worthen & Sanders, 1987). Other areas where Rice's name is frequently mentioned include

school governance (Mitchell, 1971); teacher education (Sprinthall, 1977; Smith, 1985); curriculum (Raths, 1978; Handler, 1982); and testing (Levine, 1976; Tittle, 1982; Payne, 1984).

That Rice is cited so frequently suggests that educators find him useful to make their case, even when their areas are widely divergent within the larger field of education. That references to Rice are common a century after his first studies were published could mean that Rice's work embodies principles that are meaningful to the educational research establishment today. Alternatively, Rice could be cited simply because it has become conventional to do so. In other words, educational writers and researchers have become faithful to a tradition that does not necessarily have content or meaning, but that somehow got started in the early research days.

This paper examines the manner in which Rice has been treated by educational writers of the past and present. It attempts to ascertain Rice's importance in educational research through a systematic study of Rice's original works in the context of the latter-day literature in which he is cited. Questions explored include:

Did Rice develop a model for educational research that may be called the "Rice Paradigm"?

If a "Rice Paradigm" exists, is it definable in terms of purpose, method and assumptions ?

Are the questions that Rice formulated relevant today?

Assuming that a "Rice Paradigm" exists, to what extent has it remained viable over the years?

To answer these questions, the study combines the historical and empirical approaches. In the first phase, an analysis of Rice's major studies is presented in an attempt to identify and explain the "Rice Paradigm" in terms of assumptions, purpose and method. Literature in which Rice is cited is surveyed to determine the exact areas where Rice-like questions and framework for research have found most utility. In the second phase, the results of a survey of a selected sample of recently published educational research studies are considered as empirical evidence of whether the "Rice Paradigm" is still relevant today.

Some Background on Joseph Mayer Rice

Although Rice's name is listed in the Biographical Dictionary of American Educators (1978), he was never a practicing educator. Chronologically, he came after the first generation of American educators such as Henry Barnard and Horace Mann, who gained prominence in the 1840s as pioneers of the unified system of public schools that emerged at this time (Tyack, 1974; Travers, 1983). He does not quite belong with the "professional" educators who became conspicuous during and after the 1890s through their work in education at the universities or through their involvement with organizations like the National Education Association (NEA) and National

Society for the Study of Education (NSSE). (Outstanding figures were Ayres, Dewey, Judd, Thorndike, Cubberley, Monroe.) Rice made educational reform his mission, but he was an outsider to the system .

Born in 1857, Rice was a trained physician, whose interest in the prevention of disease among children led to his interest in children and to the study of child development. In 1888, he abandoned his medical practice to pursue the study of psychology and pedagogy in Germany in the Universities of Jena and Leipzig. He returned to the United States in 1890 to engage in an extensive eight-year study of one hundred or more school systems in America and Europe. This he did under the sponsorship of Forum magazine, of which he served as editor between 1897-1907 (Ohles, 1978).

Rice's Research

From a research perspective, Rice's studies fall into two categories. The first group of studies were studies on individual schools that were later characterized as having employed the naturalistic inquiry approach (Guba and Lincoln, 1983). In these studies, Rice recorded observations in a natural setting without the use of a rigid schedule or protocol for observation. Although he had general questions in mind for which he was seeking answers (Rice, 1893), his method of obtaining information was patterned by the natural course of events occuring in the schools at the time that he

made his observations.

The second series of studies later came to be called school surveys (Judd, 1938). Here, quantitative data were gathered in a systematic way to answer well-defined questions. The focus was on selected variables. Attempts were made to account for other variables that were not central to the research question. The purpose was to describe and compare phenomena. In this type of study, Rice used tests as data-gathering instruments. Students' performance scores on the tests served as the major basis for drawing conclusions.

Early Research: Naturalistic Observations

During the first five months of 1892, Rice visited a large number of schools in 36 cities in the United States. His primary goal was to identify the factors that separated inferior schools from superior ones so that the former could reformed. Rather than use official school reports (which he described as "purely political documents") as the data source, Rice decided to rely on personal observations of classroom instruction. He drew his conclusions on the conditions of schools by observing more than twelve hundred teachers at work in classrooms across the United States (Rice, 1893). In a formal statement of purpose Rice said:

> (By these) investigations, I hoped to discover the causes of the marked variation in the general degree of excellence of the schools of various localities, fully conscious of the fact that the

> first logical step in permanently raising the standard of the schools must necessarily be in the eradication of the causes of their inferiority (Rice, 1893, p. 2).

Rice was also interested in differences in management styles and their relationship to whether the schools were "scientific" or " mechanical". For this, he gathered information through meetings with superintendents, principals and teachers, and by attending board and teachers' meetings (Rice, 1893). Reports of these studies were later compiled in the book, The Public School System of the United States (Rice, 1893).

Interspersed in the narrative of the book are the terms "new education" and "old education"; and the terms "scientific/ progressive school" and "unscientific/ mechanical school". Rice used these descriptors to characterize what he felt were desirable and undesirable school systems, respectively. Rice's experiences in German schools had kindled in him a faith in pedagogical practices that nurtured the free, expressive and participatory learning in children (Rice, 1891). Rice refers to this type of system as "progressive" or "scientific". This trend in schools in the 1890s represented the "new education" (James, 1958; Rice, 1893). The "mechanical" or "unscientific" schools were those that belonged in the old tradition and subscribed to methods of recitation and rote, and where the children were taught under regimented conditions (Rice, 1893). Rice was a firm advocate of the new education.

For Rice, the school existed for the learner. It was the primary responsibility of the school, therefore, to provide conditions where the child could learn. The school was a place where a child would think rather than memorize; develop and grow rather than be repressed; explore and inquire rather than be drilled. In the preface to The Public School, Rice elicited the larger purpose of his mission as follows.

> ..the school exists for the benefit of the child, and not for benefit of the boards of education, superintendents or teachers. In this work the child's side will be presented, and the spirit in which it is written is the same as that in which an advocate pleads for his client (Rice, 1893, p. 4).

When Rice spoke of "scientific management in education", he was referring to the pedagogical aspects of education rather than to "the business side of school affairs" (Rice, 1914, p. viii). To scientifically manage education was to eliminate "waste" in teaching and thus, to promote maximum learning in students. According to Rice, any time and effort that a child devoted to the learning process could be appropriately rewarded if the teaching were scientifically managed. This meant that teachers, superintendents and principals have available to them an array of scientifically derived principles or "facts" that could guide practice in the classroom.

There is little doubt that Rice was an empiricist. "Data-collection" and "research" are terms by which he

described his own work. Evidence of his faith in the inductive method of science is obtained throughout The Public School. Consider these instances where Rice states that, "...In some cities, nearly two weeks were spent in collecting the required data, while in others they were comfortably attained in a day or less" and "...I continued my researches until the number of observations made justified my conclusions" (Rice, 1893, p. 3).

Rice made his observations in the elementary grades. The vivid and detailed descriptions of the student-teacher activity in the classrooms observed do tend to support his conclusions. The findings were mostly repetitive. Whether the classroom observed was in New York City, or Baltimore or St. Louis, the teaching methods stressed rote learning and memorization such that the child became an immobilized, automatized and dehumanized recipient (Rice, 1893). This was true across subject areas like mathematics, language, science and even music. In the majority of the schools, the recitation method predominated.

Rice's observations typically look like this.

In Baltimore:

> "We are just adding ", the teacher said to me. "I am very particular about adding. I devote from one and a half hours to one and three quarter hours to this subject..."
> She then faced the class and said,
> "Start that column over again."
> A little boy (apparently the leader of the orchestra)

now began to tap on the blackboard with a stick, beating time upon the figures, while the class sang in perfect rhythm: "1 and 1 are 2; 2 and 1 are 3," and so on until the column was completed.....

(Rice, 1893, pp. 56-57);

and in New York :

...a good part of a lesson in music is devoted to drilling the children in definitions. I heard the pupils in one of the classes give at least twenty five music definitions. In penmanship, the pupils learn by heart any number of principles of writing, none of which is known to most of those who earn their livlihood with the pen (Rice, 1893, p. 38).

Rice's conclusions were threefold.

1. School systems observed could be classified as scientific or unscientific. The scientific school subscribed to the ideals of the "new education" in that teachers were guided by "laws of psychology and principles of education" (Rice, 1893, p. 21) and the child was led to observe, reason and " develop in all his faculties, intellectual, moral, and physical." The unscientific schools, which outnumbered the scientific ones in Rice's study, employed the mechanical methods of drill and recitation and aimed at crowding the child's mind with information.
2. Scientific schools were not only different from mechanical schools, but facts proved that they were in no way inferior to them. In fact, they treated the child as a

thinking, developing individual, and from this perspective these schools were superior.

3. The four elements that were exerting the most influence at the time on public schools were:
   a. the public, by their apathy or interest; Rice blamed the muddled state of affairs in schools on citizens lacking the needed "active interest" . In particular, he found the lack of concern in parents of children to be frustrating (Rice, 1893, p. 49).
   b. the boards of education, by their politics and motives; Rice concluded that mechanical schools resulted from corruption and selfishness on the part of school officials and criminal negligence on the part of parents. The forms of irregularities Rice describes includes the appointing of superintendents and teachers by "pull" rather than merit to serve as tools for the school board (Rice, 1893, pp. 26-27).
   c. the superintendent and their staff, by their methods of supervision; Rice decided that the antiquated mechanical system of education resulted from "misdirected and incompetent supervision" (Rice, 1893, pp. 26-27).
   d. the teachers, by their qualifications and approach to teaching (i.e., scientific vs. non-scientific or progressive vs. mechanical).

Based on this initial round of fact-gathering Rice was able to say confidently that the effects of the time factor on learning of the three Rs was unclear to teachers and

principals. They operated under the assumption that more time in drill produced more learning. They were afraid, in Rice's words, to make learning "thoughtful" in their attempt to "save the minutes". Rice produced facts that contradicted these assumptions. He found that ".. the pupils read and write better, and cipher at least as well, in the schools where the work is most thoughtful (Rice, 1893, p. 25).

The time issue became an important one in Rice's subsequent work. The profitable management of time in promoting student learning was essentially tied to his notion of scientific management of teaching. Questions related to the time factor and its relationship to learning gave birth to the comparative, "pseudo-experimental" design that Rice later used to answer questions like: Does ten minutes per day in spelling drill produce the same results as forty minutes of drill per day? He investigated this very same question in the areas of arithmetic and language too. If waste in teaching existed, it had to be established through systematic inquiry and then eradicated.

At the end of his naturalistic observations, Rice was able to document that the new education was far from an operational reality in most city school systems of the 1890s. He pointed out that the spirit of the new education lay in the methods of teaching rather than in the subjects taught and inadequate teacher preparation often resulted in the absence of scientific teaching (Rice, 1893).

Reactions to Naturalistic Observations

The kind of response that Rice had anticipated from his first publications failed to come from the public or from educators. This led Rice to try a revised strategy for reform.

In 1896, Rice expressed his disillusion and discontent in Obstacles to Rational Educational Reform (Rice, 1896). At this time, he had identified the major cause for the lack of action to be the absence of a convincing knowledge base from which principles of pedagogy could be derived and applied in classrooms. Educators, in those days, used opinions rather than facts. In addition, there was no consensus among these opinions. Rice lamented that:

> ..in former years I entertained the belief that the cause of the obstacles to educational progress might be attributed to public indifference,...politics in school boards, incompetent supervision, insufficient preparation on the part of the teachers etc...; further study (has) led me to the conclusion that these elements are not the ultimate cause of the evil(but that).....
> The ultimate cause of the lamentably slow progress towards the introduction of educational reform may be traced into the professional circle itself (Rice, 1896, pp. 20-21).

In Obstacles, Rice argued that educational progress should be made "rational" by investigating practical questions in the field, and by using the data obtained as the basis for future

course of action. He deplored that, while educators in the 19th century were agreed upon the general aims of education ("to develop a good citizen"), their ideas on "practical questions (were) conflicting to the point of absurdity" (Rice, 1896, p. 22).

Rice had identified the major problems in education to be curriculum and instruction-related. The questions that needed attention were: How much time is needed to learn the 3 Rs at a satisfactory level such that time can be apportioned to the teaching of other subjects ? What is a "satisfactory standard" in the learning of the 3 Rs ? How economically do different methods of teaching use time ? (Rice, 1896, pp. 28-32). He now proposed a plan to resolve these questions. Rice decided that, " What must be done... is to institute researches toward obtaining facts that will lead....(to) a dicovery of laws that apply to all our educators, regardless of pedagogical creed" (Rice, 1896, p. 34).

The Rice surveys were a practical demonstration of this proposal. The working assumption in the Rice approach, then, was that every question related to the process of education was a "fact" question. The fact-finding method had to be both systematic and scientific. Appropriately gathered facts could not only serve to mould future practices, but also to establish laws of pedagogy that would have universal application.

Later Research: School Surveys

The studies discussed here are the spelling and arithmetic surveys reported by Rice in The futility of the Spelling Grind (Rice,1897a) and A test in Arithmetic (Rice,1902a), respectively.

The rationale for the surveys was to collect facts, through uniform tests, on how well children had learned to spell and do arithmetic in the public schools. The method was largely descriptive, although Rice did attempt to explain and attribute causality to the results. In the study on spelling, average percents were reported in tables by grade level, school and city. Rice made inter-school and inter-city comparisons with the data and related student performance in spelling to conditions of schools. (The latter variable, i.e., conditions of schooling, was usually either the amount of time devoted to teaching, or progressive vs. mechanical methods). He also tried to link performance on tests to student attributes such as age, sex, nationality and environment (Rice, 1897a).

The manner in which Rice tackled the problem of obtaining valid and uniform measurements necessary for making fair normative comparisons, is particularly interesting. The word lists or passages used for the spelling tests were common. But an initial administration of the tests yielded enormous ranges of average scores with an upper limit of 95.3 %. This somewhat contradicted the findings from Rice's previous observations. On investigation, he discovered that the "unusually favorable results in certain classrooms did not

represent the natural conditions, but were due to the peculiar manner in which the examinations had been conducted" (Rice, 1897,p. 68).

Although Rice had used the same tests, he had not been able to control administration of the examination in the first tryout. He discarded the results of this "pilot" round and readministered the tests under his own supervision to keep irregularities under control.

Rice made attempts to control scoring of the tests as well. This excerpt shows his concern for maintaining uniform scoring procedures, an essential feature of modern standardized tests. " The marks in the spelling compositions,.. are based on the actual number of correctly spelled words per hundred. When the same word was misspelled more than once in an individual composition, one error was counted". (Rice, 1897a, p. 72)

The results showed that there was no difference in the amount of variation in spelling ability in mechanical and progressive schools, or in schools with culturally different children. Girls schools had higher averages than boys' schools. Rice did discover, however, that the differences in spelling ability were very small in the upper grades, regardless of the time devoted or methods employed. This led him to ask a provoking question. "Do these results not indicate that, in learning to spell, maturity is the leading factor, while method plays a subordinate part? And, if the superiority of the old fashioned spelling grind cannot be

demonstrated, is it not our duty to save the child from this grind?" (Rice, 1897a, p. 78)

The questions investigated in the survey on arithmetic were much the same as those for the spelling survey. The analysis and treatment of data were also similar. An additional purpose of this study was to examine the improvement of arithmetic ability from year to year. To accomodate this question, Rice had to develop an early version of a developmental "power" test. In A Test in Arithmetic, He explained the procedure he adopted as follows:

> ..for the purpose of studying growth of mental power from year to year, some of the problems were carried through several grades. Thus, of the eight questions for the fourth grade, five were repeated in the fifth, and three in the sixth, etc. ..this repitition will enable us to see.. how the results in the fifth and sixth grades ,in regard to certain problems, compare with those of the fourth.. (Rice, 1902a, p. 103).

Not all the questions were satisfactorily resolved by the latter study. In fact, many new questions surfaced as a result of confounded findings. One of Rice's conclusions was that "the figures do not tell us to what extent the improvement was due to age, in how far it was the result of practice, or what part had been played by instruction" (Rice, 1902a, p110).

Rice's Areas of Concern

Rice's major areas of interest may be derived from a brief overview of his studies. The following is a sample of his later works. In The Essentials in Elementary Education (1897b) Rice addressed issues related to the curriculum content at the elementary level and the use of standards to ascertain whether the three Rs had been learned at this level. In Economy of Time in Teaching (1897c), Rice focused on the time factor and its effects on learning "without waste". In Causes of Success and Failure in Arithmetic (1903a), he examined the effects of time, methods of instruction, and teaching ability on students' test scores in arithmetic. In Talent vs. Training in Teaching (1903b), he considered the effects of teacher variables on student performance. In the spelling and arithmetic surveys (decribed in detail in previous sections), Rice described and compared student performance on common tests across cities and schools. In A New Basis in Supervision (Rice, 1904), he elaborated on the role of research in the running of schools.

Rice also showed concern over the adequacy of his own research methods. In reformulating every question in education as a fact question, Rice assumed that the data were scientific facts. The equivalence between data and reality is contingent on the strength and appropriateness of the methods used to gather and analyze the data. Rice expressed concern not only about the validity and standardization of measurement, but also about the validity of the inferences made regarding the

school and teaching variables in his comparative studies. The possibility that the observed differences (or their absence) could result from factors not accounted for by him in the design of his research did not elude him. That he did try to control the "internal validity" of his research is evidenced in this quote: " I was fully aware,.. that the results of my tests would be worthless for scientific purposes unless the conditions were fully considered, I made an effort to study the latter from every concievable point of view" (Rice, 1914, p. ix). To take into account all the factors that could interfere with the test results, Rice presented the data in 68 columns! Only one of these columns contained the actual test scores, the remaining described the conditions under which the scores were obtained and included such variables as age, grade, time devoted to drill per day, school and city.

With respect to the validity of making observations on children, Rice had these doubts. " It may be that the nature of the child's mind is so elusive...., that all definite observations are rendered impossible. . On the other hand, it may be that we have not yet applied the proper methods of observation. If the latter is the case, we must see what can be done to improve our methods of observation" (Rice, 1902b, p. 3). This comment is interesting in light of the fact that Rice's early research consisted of direct observation of classroom activities.

From the above evidence, four topical areas stand out as

Rice's major areas of interest. These areas are:

1. Curriculum-related
2. Teaching or teacher-related
3. School evaluation or assessment-related and
4. Measurement and research method-related

The Purpose of Rice's Research

That Rice's efforts at research were driven by a zealous need to reform a system that was mistreating rather helping the learner is obvious in both his early and later works. However, Rice also seems to have had a methodological motive to bring about reform in the "right" way.

Rice tried to point out that problems in education could be solved, not by speculation, but by direct observation of phenomena and fact-collection. He was convinced that hypotheses had to be tested empirically and educational practice be supported by such research findings. He said, "In my researches I look for genuine facts; and if the facts I find look queer and fail to bear out some of our long-cherished theories, do not let us blame the facts, but let us reconstruct our theories." (Rice, 1902a, p. 101)

This thesis was presented by him formally in Educational Research, (Rice, 1902b). Here, Rice reemphasized that pedagogy, unlike other sciences, had established no facts. In spite of its long history, education was founded on opinions that often conflicted. The means employed in education were " a matter of philosophical creed" (Rice, 1902b, p5) ; Rice

advocated that it become a matter for scientific inquiry. In Educational Research Rice stated:

> Although this aspect of the problem (i.e., means and methods of education) has been thus far treated from the standpoint of creed, it is not a matter of creed, but one of scientific inquiry, and calls for treatment on the inductive plan (Rice, 1902b, pp. 4-5, emphasis and parenthesis added).

Rice's Reputation and Importance

In Educational Research

Rice conducted his surveys to lend support to his classroom observations, which were written off by educators in the 1890s as casual and prejudiced. There was no response at the time from teachers or the public (Travers, 1983). This interpretation is supported by Rice's own writings (Rice, 1896). Did the revolution that Rice had hoped for come after he provided objective data to reinforce his observations ?

Rice himself has recorded that professional educators resisted his questioning and attempts at research. He was opposed at professional meetings, such as the Meeting of Superintendents in 1897, by the majority of educators (Rice, 1902b). Professor Hanus from Harvard University recognized the worth of the Rice surveys and the Rice approach, but he was in the minority (Rice, 1902b). Travers (1983) has

concluded that: "One suspects that he was regarded by his contemporaries more as a muckraker than as a serious research worker or educational reformer" (Travers, 1983, p. 98).

In spite of the opposition, Rice founded a Society of Educational Research in 1903, the goals of which were to set up a bureau of research to investigate and disseminate information on the effectiveness of educational practices (Ohles, 1978; Travers, 1983). This society was supported by Forum; however, it had a short life. Such evidence has led many authors to conclude that Rice was singularly unsuccessful in gaining the support of academicians in his day (Resnick, 1981). Travers adds that "(Rice) cannot be given credit for any particular innovation in the field of education or educational research" (Travers, 1983, p. 98).

This latter position is largely contradicted in much of the recent educational research literature in which Rice is cited, as well as some that dates back to the early 20th century. Once education began to acquire professional status in that departments of education were established in universities to conduct research, Rice's work started to get noticed. Rice has gratefully acknowledged recognition accorded to him by Thorndike, Cornman (an assistant school superintendent from Philadelphia), and Cliff Winfield Scott (a Ph.D. student from Columbia University) (Rice, 1914). This recognition came almost a decade after Rice first began to publish his research.

Charles Judd, an eminent professional educator and psychologist of the early twentieth century, attributed to Rice the origins of the survey technique in education (Judd, 1938). In an article on school surveys published in the 37th Yearbook of the NSSE, Judd noted that although Rice did not use the term "survey" in his articles, his method of making quantitative comparisons based on data gathered by testing and his analysis of the significance of these data, were of the type that later came to be characterized as the school survey (Judd, 1938).

It is well-known that test-based school surveys for status assessment became extremely popular in the two decades following Rice's publications. (For examples of studies of this time, see the 13th Yearbook of the NSSE, 1914.) Leonard Ayres, a contemporary of Rice, described Rice as " the real inventor of the comparative test" (Ayres, 1918). The value of scientific measurement as the basis for reorganization of the school system had been recognized and widely accepted by the early 1900s. While it is hard to establish that Rice alone contributed to this movement, there seems little doubt, that the Rice studies greatly promoted the idea.

A more recent authority who acknowledged Rice's role as a pioneer in educational research is Ebel (Ebel, 1980). In an article that examines the value of the survey technique as opposed to the experimental method, Ebel stated that Rice's influence helped launch the scientific movement in education in the 20th century. According to Ebel,"Rice skillfully

pioneered test construction. He also strongly advocated scientific methods..in the study of educational problems" (Ebel, 1980, p. 131). Although Rice was derided for his attempts to measure educational products in his lifetime, his name does indeed appear in most historical accounts of achievement tests, both normative and competency testing (Levine, 1976; Tittle, 1982; Payne, 1982) .

The area in which Rice's impact seems to have been the greatest is perhaps evaluation and research methodology. The usefulness of naturalistic observations in educational evaluation has been recently advocated by Guba and Lincoln (1982), who cite the first Rice observations as early examples in naturalistic inquiry. Guba and Lincoln, like Ebel, hold that the pure experimental paradigm has limited applicability in social science research. According to these authors, results of experimental research in education are "inconclusive, difficult to aggregate, and virtually impossible to relate to happenings in the real world. A competing paradigm, dedicated to the study of behavioral phenomena in situ ..... is the so-called naturalistic approach" (Guba and Lincoln, 1983, p. xi). Historical evidence suggests that Rice turned to the quantitative paradigm only after he was unable to convince his contemporaries with the results of his qualitative observations. In a period that was greatly influenced by Darwin, it is likely that quantitative research had greater scientific appeal. In today's context, we have in the Rice

studies, hard evidence that qualitative and quantitative findings can indeed be complementary. Rice was able to build on his qualitative research to formulate questions for his quantitative surveys. The results of his surveys, on the other hand, enabled him to confirm or disprove his original hypotheses. In Rice's research, the two methods, instead of being antithetical, actually functioned as interdependent, complementary tools.

Other authorities (Madaus and Stufflebeam, 1984) in the field of evaluation, who find utility in the quantitative paradigm, interpret the type of analyses and hypotheses suggested in the Rice surveys to be the forerunners of those used in the pure experimental design that later gained popularity in education. In their words, " (Rice's) argument that educators had to become experimentalists and quantitative thinkers and his use of comparative research design to study student achievement was a harbinger of the experimental design approach to evaluation first advanced by Lindquist.. (Madaus and Stufflebeam, 1984, p. 654).

When viewed from the above perspectives, Rice seems to have paved the way for both paradigms, qualitative/naturalistic and quantitative/experimental. The above interpretations also indicate that in the field of school evaluation, Rice is viewed as an early model. Rice devised and field-tested both qualitative and quantitative methods of inquiry in education. These methods were subsequently refined and formally established by sophisticated researchers such as Thorndike.

Perhaps it is for this reason that Ayres (1918) classified Rice as the inventor and Thorndike as the father of educational measurement and research.

Researchers in curriculum and instruction, in particular curriculum evaluation, make frequent references to Rice. This is not surprising in view of the fact that the major research questions that Rice had identified focused on curriculum-related issues such as time and subject matter. Walker (1975) ascribes to Rice the origins of the basic evaluation paradigm, i.e., by comparison of student performances on standardized tests. Raths (1978) states that Rice-like models in curriculum evaluation had been applied and found adequate until the late 1960s. He adds, "Since Rice's time, curriculum evaluation has been seen basically as research. The information resulting from an evaluation was expected to be generalizable. The data had to be scientific. Variables were manipulated and outcomes assessed"(Raths, 1978, p. 243).

Rice's concern with methods of teaching (e.g. time in drill, progressive vs. mechanical methods) as they related to student learning is adequate reason for teacher educators to find meaning in the Rice studies. Sprinthall (1977) has noted that a systematic study of classroom interactions done in 1912 by Stevens, substantiated virtually every observation that Rice had made earlier in The Public School System of the United States. Ever since, teaching effectiveness research has used direct observation of teacher performance

in the classroom as a standard technique for data collection. Evidence for this is obtained in process-product research done in the 1960s, and in the most current research on teacher effectiveness (Smith, 1985). Interestingly, the 'product' (or the dependent variable) in these studies has invariably been student achievement, as in the Rice studies.

Travers (1983) has pointed out that the value of the empirical approach in the study of educational problems had been demonstrated long before Rice became active in educational reform. Well-known names that are associated with early empirical research in education are those of Howe and Mann, who conducted the Boston surveys in the 1840s; of Henry Barnard, who introduced the concept that school legislation should be based on facts and figures collected from schools; and of William Torrey Harris who helped bridge the gap between the scientist and the educator. Travers (1983) credits Rice for having sorted out the important variables in education, but no more.

It is proposed here that Rice's contribution to educational research was primarily methodological. Rice's designs and methods of data collection and analysis are today recognized as precursors of formalized models of educational research that evolved in the 20th century. Clear parallels can be drawn between Rice's methods and at least three modern techniques of educational research. These are the use of standardized norm-referenced tests for comparative purposes, the use of quantitative descriptions or surveys for status

assessment, and the application of naturalistic or qualitative descriptions for school evaluation. Rice also identified important questions that needed to be addressed through research in the areas of curriculum, teaching, school evaluation and measurement and research methodology. Thus it is no surprise that Rice's name frequently appears in educational literature in these particular areas. In evaluating Rice's importance in educational research, such evidence cannot be overlooked.

In Public School Education

Rice's importance in educational research is more clearly visible in the literature than his role in public education as a whole. Historical accounts of the beginnings of the public schools and their governance take the position that reform in schools was activated in 1890s by public outrage provoked by muckraking journalism. Such accounts hold that Rice, as a muckraker, helped create the needed climate of public opinion that ultimately contributed to sweeping reforms in the public school system. (Tyack, 1974; Mitchell, 1982)

Tyack and Hansot (1980) propose that leadership in public education during the nineteenth century, mainly took the form of guiding a social movement by the mobilization of opinion and effort at the local level. In those days, education had yet to be professionalized and established as a scholarly discipline. Under these conditions, "the people responsible

for running the enormous, scattered network of common schools were hundreds of thousands of lay people and short-term educators, aided by a small contingent of career professionals" (Tyack and Hansot, 1980, p. 298).

These "crusaders" were respectable citizens who had great confidence in their ideologies and who worked with evangelical zeal at persuading their fellow citizens to build schools that expressed and perpetuated those values. As an active spokesman of the new education, Rice was an important lay influence. He represented the end of the line of non-professionals who were influential in giving shape to the public schools until the late 19th century. (Tyack and Hansot, 1980, p. 303)

The Rice Paradigm

Cronbach and Suppes proposed a useful distinction between types of research by identifying two broad areas of inquiry, conclusion-oriented and decision-oriented. By their definition, conclusion-oriented inquiry takes its direction from the investigator's hypotheses or beliefs related to the status of knowledge in a particular discipline. It is designed to defend or clarify particular theoretical notions (Gideonse, 1980; Cooley and Bickel, 1986). Decision-oriented inquiry, on the other hand, is designed to provide information to the decision maker. It is intended to form policy and practice. Such research includes evaluation and operations research, and large scale ongoing data-collection efforts (surveys).

If the above classification is used, it becomes clear that in terms of purpose, the Rice studies belong in the latter category of decision-oriented research. In fact, the Rice studies could possibly be the first nationwide efforts at decision-oriented inquiry that began a movement in education for school evaluation or school effectiveness research. Since his time, this class of studies have asked the same questions (How are the schools doing? or, Which method works best?). They have employed similar or only slightly modified methods (qualitative or quantitative descriptions, studies of variable relationships, both experimental and nonexperimental). They have often focused on the same

dependent variable (student achievement). They have made the same assumptions (the data are scientific facts, the results are generalizable).

Broadly speaking, the Rice paradigm is the classic paradigm for scientific inquiry. In specific terms, it is the paradigm for decision-oriented educational research or what has variously been called "applied" or "useful" research (Johanningmeier, 1986). Methods that are typically Rice methods are those that are descriptive. The term "descriptive" here is used in the sense that Best (1981) uses it. Best classifies social and behavioral research into three broad categories : descriptive, historical and experimental. According to him, descriptive studies describe and interpret what is. Examples are non-experimental studies such as surveys, evaluations and assessments, ex post facto research, trend studies, and ethnographic studies.

Early studies patterned after Rice's model include Thorndike's study on dropouts entitled The Elimination of Pupils from our Schools (Thorndike, 1908) and Ayres' study on failures entitled Laggards in our Schools (Ayres, 1909). These studies reflect the "Rice Paradigm" in terms of both method and purpose. The first study was sanctioned by the then commissioner of education, Elmer Ellsworth Brown, to specifically ascertain factors contributing to the retention and elimination of pupils at different grade levels and to provide a status report on the existing conditions in the school system. The goal was to identify the problems and to

improve the system. Thorndike conducted a survey to obtain the necessary data on selected variables. This report, in appearance, looks very much like the reports of Rice's quantitative surveys. The Coleman report on the equality of educational opportunity (Coleman et. al., 1966), a descriptive study of variable relationships, is a more recent study in the Rice tradition. Here, the question was to determine how school-related variables are related to student achievement as compared with family/home-related variables. The object was to ensure that federally funded school programs were having the desired effect. This was a policy-oriented study that employed the descriptive model. The "Rice Paradigm" is particularly evident in effective schools research, and in research on teacher effectiveness. In the former, student achievement scores from standardized tests are compared in an effort to infer the efficacy of a given teaching method, curriculum or a teacher. In the latter, the experimental method is frequently employed, and controlled comparisons are attempted between Teacher A and Teacher B or Method A and Method B, as may be appropriate in the specific case.

Empirical Validation

A study on Rice would be incomplete without an empirical verification of the proposed hypothesis. This paper proposes that Rice is important. Evidence of Rice's importance is found not only in the number of citations on Rice in the literature on public school research, but also in the models of research that are in use today. It is advocated that Rice be remembered not merely for his role as a muckraking journalist who may have contributed to public school reforms in the 1900s, but more for his role as an empiricist who developed powerful models of research that persist to this day.

It has been claimed that the "Rice Paradigm" is primarily decision-oriented in purpose and descriptive in method, and that this paradigm is prominently reflected in school evaluation and school effectiveness research, as well as research on teacher effectiveness. If this definition of the "Rice Paradigm" is accepted, it becomes possible to answer two questions of the present study on the basis of an empirical survey of a selected sample educational studies.

Purpose

The purpose for the investigation that is now described, was to obtain empirical support for the conclusions drawn on the basis of historical and current documentary evidence that was presented in the previous sections. The general questions explored in this phase of the study were:

1. Is the "Rice Paradigm" (including Rice-like questions) relevant today? and
2. Is the "Rice Paradigm" used today?

The specific questions explored were:

1. What proportion of a selected sample of current published research studies focuses on public schools, the area in which Rice was interested?
2. What proportion of the selected sample of published studies are practical or decision-oriented?
3. How many studies in the sample use Rice-like methods of research?
4. How many studies focus on variables which Rice had identified as relevant?
5. How many studies focus on areas with which Rice showed concern, eg. curriculum, testing, teacher education, school evaluation, research methodology?

Presented below is a summary of the methods used to address these questions and the results obtained.

Data Source

The sample of journal articles used for the empirical part of the study was obtained from an earlier study on published educational research conducted by Hall et. al. (1986). This sample was drawn from the population of published educational research articles in 32 educational journals in 1983. (See Appendix A for a list of journals from which the sample was drawn.) The journals were selected on the basis of two

criteria. (1) They must have been indexed in the Education Index; and (2) they must have been cited 10 or more times in chapter bibliographies of the Review of Educational Research during four full years immediately preceding the year selected for the study.

The sample was a stratified random sample, where the strata in the sample were the journals. From each stratum (journal), a 9% random sample was drawn.

Method

An available group of faculty members from the College of Education, University of South Florida, served as the judges in the study. Each judge was provided with a packet of 2-3 articles pulled at random from the sample. Each article was then analyzed by the judge who recieved it, using a protocol developed by the researcher. This instrument focused on four general attributes of research studies that were:

1. Major area of focus
2. Purpose for the study
3. Major variables of interest
4. Research Method(s) used

Details of the instrument and a report of a study on inter-judge agreement for individual items and the overall instrument are given in Appendix B. As the judges were all either doctorates or active researchers (or both), it was assumed that the group would be sufficiently homogeneous with respect to their training in and approach to educational

research to provide reasonably consistent classifications of the studies in the sample. This assumption was partially borne out in the satisfactory percents of inter-rater agreements obtained. (See Appendix B.)

Results

Of the 64 research studies that were distributed among judges, 49 were returned completely analyzed and classified. The areas that these studies covered using major divisions of research identified by the American Educational Research Association (AERA) are represented in Table 1.

Insert Table 1 about here

While a fair proportion of the studies focused on topics that were clearly not Rice-like (eg. Learning and/ or Learner-centered topics: 21.8%; Counseling and Human Development: 16.4%)), a total of 43.5% of the studies were classified to belong in areas that this study identifies as Rice-like. These areas include Measurement and Research Methodology (14.5%); Curriculum studies (5.5%); School Evaluation (9.0%); and Teaching/ Teacher Education (14.5%).

Insert Tables 2 and 3 about here

When the studies were classified based on whether they focused on problems that pertained to public school education, a majority (55%) were identified as belonging in this category. Some of these (n=18) used samples of public school children ranging in grade level from Kindergarten to Grade 12. The remaining used samples of teachers, counsellors and others. Tables 2 and 3 provide details of these data.

In terms of purpose or orientation, a large proportion of the studies was charaterized as having a primarily practical orientation (53.0%). A practically oriented study was defined on the instrument as one that is aimed at effecting policy or practice and that is usually geared towards reform. (See Item 8 on instrument-- Appendix B.) As has been stated earlier, Rice's research efforts were primarily practical or decision-oriented. A relatively smaller proportion (20.5%) of the studies were identified as having a purely theoretical orientation, the equivalent of conclusion-oriented inquiry. A fair number could not be classified as belonging to one or the other category and were grouped as a " combination" of the two. Table 4 presents these results.

Insert Table 4 about here

More studies were classified as quantitative studies (76%) rather than qualitative studies (19%). Five percent were identified as having employed both qualitative and quantitative methods. Table 5 provides these results.

Insert Table 5 about here

When the judges were asked to provide more specific classifications with respect to methods of research used, the largest number of classifications were found in the category of Quantitative Descriptions (31.7%); a good number (24.6%) were identified as Correlational; 17.5% of the classifications were in the Experimental category; and 10.5% were interpreted as Qualitative descriptions. Representation in the total sample of Rice-like classifications in method amounted to 49.2%. Studies with complex designs often used more than one of the methods listed in Item 6 of the instrument. Table 6 presents these results.

Insert Table 6 about here

While it was relatively easy to arrive at Rice-like and non Rice-like divisions of studies with the attributes so far discussed (i.e., major area of focus, purpose, and method), classifying the studies in the sample using variables was an impossible task. Current research studies show enormous variations in complexity due to the numbers and the nature of the variables that are considered relevant by researchers. Even when the major variables of interest could be identified as one or two, rarely were these the only variables that are taken into account in the overall study. Thus, although many studies were found in the sample that used achievement or achievement related factors (a Rice variable), these were rarely the only ones that contributed to the overall results of the studies. An attempt was made to tally variables as they were identified by judges and to place them in broad groups. Table 7 contains a summary of the resulting classifications.

Insert Table 7 about here

In summary, the empirical results indicate that the scope of educational research today extends far beyond the realm of public schools, which was Rice's primary focus. However, public school education as an area of research is still predominant. Many of Rice's specific areas of concern still attract much research (eg. curriculum, teaching/ teacher education, school evaluation, measurement and research methodology). Although it may not be meaningful to debate the value of conclusion-oriented inquiry as opposed to decision-oriented inquiry in educational research, studies in the sample used seemed to be weighted heavily in the latter approach. Quantitative descriptions and correlational methods of research were the found to be the most frequently employed methods of research.

Conclusion

Rice has been described in the literature both as a muckraker-- or a layman who tried to reform the public schools through sensational journalism, and as a pioneer researcher. Many historians highlight Rice's role as a muckraking journalist. Authors in areas such as school evaluation, teacher education, curriculum and measurement and research methods tend to portray Rice in the latter role of a researcher.

Both historical and empirical evidence supports the conclusion that Rice's model for research continues to be a valid one today in terms of both purpose and method. Although significant technical strides have been made in the areas of measurement and research methodology, many researchers still find utility in a Rice-like descriptive model. Rice's research was primarily decision-oriented. Current published research studies frequently have the same orientation. It is likely that a large proportion of decision-oriented studies remain as unpublished documents in district offices of school systems. However, a considerable number do find a place in reputed educational journals.

Some histories of educational research have recognized the Rice studies as the starting point of the modern movement of the "objective study of education" (Scates, 1947, p. 241). In discussing what the best research efforts in education have accomplished, Joncich Clifford has used the example of a

Rice-like study, if not a Rice study. Her comments were:

> The best education research has probably either (1) supplied specific answers to important technical questions in school operations or (2)provided information clarifying or intensifying educational issues of considerable social meaning. Examples of the former are some of the first testing surveys challenging assumptions about the efficacy of generous time allotments in spelling, arithmetic and handwriting study;.....an example of the latter is the pronounced correlation found between social class status and access to public secondary and higher education (Joncich Clifford, 1971, p. 520).

These authorities, like many others quoted in this paper, unanimously acknowledge Rice's contribution to the field of educational research. This study concludes that Rice's major contribution was in the identification of key questions in education and in the innovative use of methods to address them. Many modern concepts in measurement and research methodology have their origins in Rice's work.

With the current emphasis of the AERA on Research, Policy and Practice, it is fitting that Rice's contribution to research be remembered and acknowledged. Rice gave educational researchers a framework for inquiry and a focus. He attempted to demonstrate why educational research needs to be supported, what its direction should be, and how it could serve as an agency that drives policy and practice in

educational institutions. These continue to be important concerns of the educational research establishment today.

TABLE 1

Attribute: Major Areas of focus

Number of classifications under each AERA Division*
Sample: Published research studies N=49

Area	Frequency	Percent
1. Measurement & Research Methodology	8	14.5
2. Administration	1	1.8
3. Curriculum studies	3	5.5
4. Learning and/or learner centered	12	21.8
5. Counseling/ Human development	9	16.4
6. History and historiography	0	0.0
7. Social context of education	2	3.7
8. School evaluation	5	9.0
9. Education in the professions	0	0.0
10. Post-secondary education	3	5.5
11. Teaching/ teacher education	8	14.5
12. Other	4	7.3
TOTAL	55	100.00

*Some studies were classified under more than one area

Representation in the sample of areas in which Rice was interested

AREA	Frequency	Percent
1. Measurement and Research methods	8	14.5
2. Curriculum studies	3	5.5
3. School evaluation	5	9.0
4. Teaching/ teacher education	8	14.5

Proportion of Rice-like classifications in total sample: 43.5

TABLE 2

Attribute: Major Areas of focus

Number of studies classified as dealing with a clearly public-school problem
Sample: Published research studies N=49

Classification	Frequency	Percent
Public school problem *	27	55.0
Non-public school problem	22	45.0
TOTAL	49	100.0

* Not all these studies used samples of public school children. Some focused on faculty, counseling procedures, etc. See Table 3 for supplementary data.

TABLE 3

Attribute: Major areas of focus

Nature of populations/ samples used in the studies
Sample: Published research studies N=49

Classifications	Frequency	Percent
Grades K-12 Public/non-public school	18	34.5
Undergraduate	16	30.5
Graduate	5	9.5
Not Applicable	1	2.0
Other-- Classroom teachers/ Faculty/ Counsellors.....	6	11.5
Professionals/ doctors/ hospital staff/ mechanics.....	2	4.0
Instruments.....	1	2.0
Research articles.....	1	2.0
Preschool children.....	1	2.0
Alumni.....	1	2.0
	52	100.00

TABLE 4

Attribute: Purpose of the Study

Classification of studies with respect to orientation
Question: Is the study practical (decision oriented), or theoretical (conclusion oriented) ?
Sample: Published research studies N=49

Purpose/Orientation	Frequency	Percent
1. Primarily Practical	26	53.0
2. Primarily Theoretical	10	20.5
3. Combination	13	26.5
TOTAL	49	100.00

TABLE 5

Attribute: Method

Classification of studies according to method
Sample: Published Research Studies N=49

Classification	Frequency	Percent
Qualitative	9	18.4
Quantitative	36	73.5
Both/ Unknown	4	8.1
Total	49	100.0

TABLE 6

Attribute: Method

Classification of studies according to research method*
Sample: Published Research Studies N=49

Method of research	Frequency	Percent
Qualitative Description	6	10.5
Quantitative Description	18	31.7
Correlational	14	24.6
Ex post facto	0	0.0
Developmental (longitudinal)	2	3.5
Experimental	10	17.5
Quasi experimental	2	3.5
Assessment/ Evaluation	4	7.0
Other -Validation	1	1.7
Total	57	100.00

* Some studies were classified under more than one category

Representation in the sample of Rice-like methods

Method	Frequency	Percent
Qualitative Description	6	10.5
Quantitative Description	18	31.7
Assessment/Evaluation	4	7.0
Total representation	28	49.2

TABLE 7

Attribute: Variables used in Studies

Major Categories of Variables Identified by Judges
Sample: Published Research Studies N=49

Variable Category	Number of Classifications	Percent
1. Personality Variables	22	23.7
Attitudes 7		
Anxiety 2		
Perception of self/others 11		
Personal adjustment/ bias 2		
2. Learning/ Cognitive performance Variables	21	22.6
Achievement 11		
Time on task/ in class..... 5		
Retention/ Recall 3		
Rate of learning 1		
Learning environment 1		
3. Institution/ Program/ Treatment Variables	14	15.0
School program/ teaching method... 5		
Counseling treatment 3		
Institution/ College 6		
4. Teacher Variables (other than personality)	4	4.3
Teacher Competency 2		
Teacher Burnout 2		
5. Other Variables	23	26.7
Race 4		
Grade level 4		
Age 4		
Sex 4		
SES 1		
Productivity/ Rank/ Experience.... 3		
Salary 1		
Item Order 1		
Profession 1		
Not applicable	9	9.7

References

Anglin, L. W. (1979). Teacher roles and alternative school organizations. Educational Forum. V43, N4, 439-452.

Ary, D. et. al. (1985). Introduction to research in education (3rd. Edition). New York, N.Y.: Holt, Reinhart and Winston.

Ayres, Leonard P. (1909). Laggards in our schools: a study of retardation and elimination in city school systems. New York, N.Y.: Charities Publication Committee.

Ayres, Leonard P. (1918). History and present status of educational measurements. Seventeenth Yearbook of the NSSE-Part II. Bloomington, Ind.

Best, J.W. (1981). Research in education (4th Edition). New York, N.Y.: Prentice Hall.

Ohles, John F. (Ed). (1978) Biographical dictionary of American educators. V3, Connecticut: Greenwood Press.

Coleman, James E. et al. (1966). On equality of educational opportunity. Washington D.C.: U.S. Govt. Printing Office.

Cooley, W. and Bickel, W. (1986). Decision oriented

educational research. Boston, MA: Klewer Nijhoff Publishing.

Ebel, R.L. (1980). Survey research in education - need and the value. Peabody Journal of Education, N2, 126-134.

Gidoense,H.D. (1971). Educational research - overview. Encyclopedia of Education, V7, The Macmillan Co. & Free Press.

Guba, E. G. and Lincoln, Y.S. (1982). Epistemological and methodological bases of naturalistic inquiry. Educational Communication and Technology Journal, V30, N4, 233-252.

Guba E. G. and Lincoln, Y.S. (1983). Effective evaluation. Jossey Bas Publishers, San Fransisco.

Handler, B.S. (1982). Coming of age in curriculum - reflections on thinking about curriculum. Journal of Curriculum Studies, V14, N2, 183-195.

James, William (1958). Talks to teachers on psychology; and to students on some of life's ideals. New York: W.W. Norton and Co.

Johanningmeier, E.V. (1986). What researchers mean by research - a historical view. Paper presented at the Annual Meeting of the AERA. April, 1986, San Fransisco, Ca.

Joncich Clifford, G. (1971). Educational research - history. Encyclopedia of Education, V7, The Macmillan Co. & the Free Press.

Judd, Charles (1938). Contributions of school surveys. The Thirty Seventh Yearbook of the NSSE. Bloomington, Ind.

Keppel, A. M. (1972). Changing role of american public school, 1965-1914. Current History, V62, N370, 286-296.

Levine, M. (1976). Academic achievement test - its historical context and social functions. American Psychologist, V31, N3, 228-238.

Madaus, G.F. and Stufflebeam, D.L. (1984). Educational evaluation and accountability- a review of quality assurance efforts. American Behavioral Scientist, V27, N5, pp649-672.

Mitchell, D.E.(1982). Goverance of schools. Encyclopedia of Educational Research. (5th Edition), V5, The Free Press, New York, N.Y.

Payne, David A. (1982). Measurement in education. Encyclopedia of Educational Research (5th Edition), V8, New York, N.Y.: The Free Press.

Raths, J. D. (1978). Encouraging trends in curriculum

evaluation. Educational Leadership, V35, N4, 243-246.

Resnick, D.P. (1981). Educational policy and the applied historian- testing , competency and standards. Journal of Social History, V14, N4, 539-559.

Rice, J. M. (1891). Need school be a blight on child-life ? Forum. 12, 529-535.

Rice, J.M. (1893). The public school system of the United States. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1914). Scientific management in education: Introduction. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1902a). A test in Arithmetic. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1902b). Educational research. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1896). Obstacles to rational educational reform. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1897a). The futility of the spelling grind. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1897b). The essentials of elementary education. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1897c). Economy of time in teaching. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1903a). Causes of success and failure in arithmetic. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Rice, J. M. (1903b). Talent vs. training in teaching. Scientific Management in Education. New York, N.Y.: Arno Press and The New York Times.

Scates, D. E. (1947). Fifty years of objective measurement and research in education. Journal of Educational Research. V XLI, N4, 241-263.

Smith, B.O. (1983). Some comments on educational research in the 20th century. Elementary School Journal, V83, N4, 488-492.

Smith, B. O. (1985). Research bases in teacher education. Phi Delta Kappan, V66, N10, 685-690.

Sprinthall, N. A. (1977). Psychology and teacher education-new directions for school and counseling psychology. Counseling Psychologist, V6, N4, 53-56.

Thorndike, E. L. (1908). The elimination of pupils from school. Bulletin No. 4. Washington: Dept. of the Interior Bureau of Education.

Tittle, C. K. (1982). Competency testing. Encyclopedia of Educational research. (5th Edition). V1, New York, N. Y.: The Free Press.

Travers, R. M. W. (1983). How Research has changed American public schools: A history from 1840 to the present. Kalamazoo, MI.: Mythos Press.

Tyack, David B. (1974). The one best system: A history of American urban education. Cambridge, MA.: Harvard University Press, Cambridge, Ma.

Tyack, David B. and Hansot, Elizabeth (1974). From social movement to professional management: an inquiry into the changing character of leadership in public education. American Journal of Education, N3, 291-319.

Walker, D. F. (1975). Curriculum field in formation. Curriculum Theory Network, V4, N4, 263-280.

Winne, P. H. (1982). Minimizing the Black Box problem to

enhance the validity of theories about instructional effects. Instructional Science, V11, N1, 13-28.

Worthen, B. R. and Sanders, J. R. (1987). Educational Evaluation. White Plains, N.Y.: Longman Inc.

APPENDIX A

Population and Sample of Educational Research Articles Published in 1983

Journal	Number of Articles	
	Population	Sample
Education Journals with Primarily Research Articles		
1. American Educational Research Journal	44	4
2. British Journal of Educational Psychology	36	3
3. Counselor Education and Supervision	20	2
4. Educational and Psychological Measurement	106	10
5. Educational Research Quarterly	16	1
6. Exceptional Children	42	4
7. Journal of Educational Measurement	18	2
8. Journal of Educational Research	50	4
9. Journal of Experimental Education	28	3
10. Journal of Research and Development in Education	19	2
11. Journal of Research in Science Teaching	65	6
12. Journal of Special Education	22	2
(Total)	(466)	(43)
Education Journals with Primarily Non-Research Articles		
1. American Journal of Education* (formerly School Review)	3	
2. Arithmetic Teacher	7	1
3. Educational Administration Quarterly	10	1
4. Educational Leadership	9	1
5. Educational Researcher	4	
6. Educational Technology	5	1
7. Elementary School Journal	3	
8. Harvard Educational Review	5	
9. Higher Education	17	2
10. Journal of College Student Personnel	68	6
11. Journal of Higher Education	13	1
12. Journal of Learning Disabilities	32	3
13. Journal of Teacher Education	17	2
14. Personnel and Guidance Journal	14	1
15. Phi Delta Kappan	3	
16. Reading Teacher	16	1
17. School Science and Mathematics	17	2
18. Science Education	20	2
19. Teachers College Record	2	1
20. Theory Into Practice	1	
(Total)	(266)	(25)

APPENDIX B

INSTRUMENT

A semi-structured instrument was developed to to enable the analysis of research studies with respect to four general attributes. These attributes, the items on the questionnaire used to code their presence, and the specific information that was sought by the items are presented below in summary format. Attached is a copy of the questionnaire used. Also attached are the results of a study that investigated interrater agreement among 8 judges using 4 articles from the study sample.

ATTRIBUTE	INFORMATION SOUGHT	ITEM NO.
1. Purpose of the study	Statement of problem.....	2
	Decision oriented/ practical vs. conclusion oriented/ theoretical	8
2. Major area of focus	Classification using AERA divisions	1
	Level from which sample drawn..	4
	Public school vs. non public school.....	9
3. Method	Category of research.....	5
	Quantitative vs. qualitative...	10
	Statistics used.....	6,7
4. Variables of interest	Independent/ Dependent/ other..	3

APPENDIX B CONTINUED

INTERRATER AGREEMENT

Data were collected to determine percentage agreement among judges on individual items and the entire set of 10 items that described articles overall. Ratings were obtained from eight judges on four articles selected at random from the sample. Each article was analyzed by a pair of judges. Agreement between each pair of judges was determined using the following rules:

1. When the same category was checked or the same or similar descriptors used, agreement was counted as 1.00 or 100% on that item.
2. When the same categories were checked, but one rater had added a second or third category, agreement was computed as a proportion of the total number of categories checked for that item by both raters.
3. If different categories were checked and different descriptors used, agreement was counted as 0.

For items with open-ended format, the researcher's judgement was used to determine if classifications were similar or different.

Percentage item-level agreement was computed by summing and averaging the percent agreements obtained for each item across all four articles. Total percentage agreement on separate articles was computed by summing percent agreements across items for each separate article and then obtaining an average overall rating over all four articles. The table below presents a summary of the results.

PERCENTAGE INTERRATER AGREEMENT

Item No.	Articles 1	2	3	4	Item level Agreement
1.	0.50	1.00	0.00	1.00	0.63
2.	1.00	1.00	1.00	1.00	1.00
3.	1.00	1.00	1.00	1.00	1.00
4.	1.00	0.00	1.00	1.00	1.00
5.	1.00	0.50	0.50	0.00	0.50
6.	1.00	1.00	1.00	1.00	1.00
7.	1.00	0.00	1.00	1.00	1.00
8.	1.00	1.00	0.00	0.00	0.50
9.	1.00	1.00	1.00	0.00	0.75
10.	1.00	0.00	1.00	1.00	0.75
	9.50	6.50	7.50	7.00 =	8.13

Average Item Level Agreement: 8.13/10=.813 (81%)

Average Agreement on Articles: (9.5+6.5+7.5+7.0)/4= 7.625 (76%)

APPENDIX B CONTD.

Instrument for Analyzing Educational Research Studies (IAER)

Purpose:

The IAER has been developed to analyze a selected sample of recently published educational research studies with respect to four general attributes. These are:
1. Purpose of the study
2. Method(s) employed
3. Major area of focus
4. Major variables of interest

An attempt has been made to structure the instrument. However, if difficulties are encountered in classifying studies using the given structure, please feel at liberty to add your comments wherever necessary.

If you have any questions, please call: Madhabi Banerji
974-3220

Thank you for your help and cooperation.

Article Title:

Article Code:

1. What is the major topical area that the study is concerned with ? (The areas listed represent major divisions recognized by the AERA.)

_____ Adminstration

_____ Curriculum studies

_____ Learning and /or learner-centered

_____ Measurement and Research Methodology/ Statistics

_____ Counseling and Human Development

_____ History and Historiography

_____ Social Context of Education

_____ School Evaluation/ Assessment and Program Development

_____ Education in the Professions

_____ Post-Secondary Education

_____ Teaching and Teacher Education

_____ Other (specify)

Comments:

2. What is the problem or research question?
If the question is not explicitly stated , please state the problem as it appears to you.

3. What are the variables being investigated?
If appropriate, distinguish between independent, dependent and/ or mediating variables.

Independent:

Dependent:

Other variables:

4. What is the level from which the sample is drawn?
If this question does not apply to the study, check not applicable.

____Grades K-12, Public school

____Grades K-12, non-public school

____Undergraduate

____Graduate

____Other (Specify)

____Not applicable Reason:

6. What type or types of research does this study represent ?
Check all appropriate.

_____Qualitative description

_____Quantitative description (survey)

_____Correlational

_____Ex post facto (Causal-comparative)

_____Developmental (Longitudinal)

_____Experimental

_____Quasi-experimental

_____Assessment/ Evaluation

_____Other (Specify)

6. What types of statistics are used to analyze the data ?

List Descriptive statistics:

List Inferential statistics:

7. Are the analyses univariate and /or multivariate ?

____Univariate

____Multivariate

____Both

____Not applicable

8. Does the study have a practical or theoretical orientation?
Note: A theoretical study is defined as one that defends, clarifies or tests theoretical notions; a practical study aims to effect practice and/or policy- usually geared towards reform.

____ Primarily Practical

____ Primarily Theoretical

____ Combination

____ Cannot be classified

9. Does the study primarily deal with a public-schools type of problem?

_____Yes _____No

Comments:

10. What is the predominant paradigm?

_____Qualitative

_____Quantitative

_____Both